BISC/ImmPort Data Release 15 studies
September 2015

Global Updates: Interventions, concomitant medications, adverse events and lab test data, where available were parsed for studies SDY131, SDY132, SDY133, SDY134, SDY210, SDY211, SDY223, SDY420, SDY471, SDY473, SDY474

Study Program: Center for Human Immunology, Autoimmunity and Inflammation
Title: Cellular and Molecular Characterization of the immune response in healthy NIH employees at baseline and after immunization with the H1N1 or seasonal influenza vaccines
Accession: SDY80
Subjects: 63
Study PI, contact: John Tsang PhD, National Institute of Allergy and Infectious Disease, NIH, Bethesda, MD
Study Description: The Center for Human Immunology, Autoimmunity, and Inflammatory Diseases proposes this protocol designed to obtain blood from healthy adult subjects (NIH employees) prior to vaccination and then at various time points after receiving the FDA-licensed seasonal and H1N1 influenza vaccine. These samples will be used to perform a comprehensive and detailed analysis of the immune system at baseline and in response to vaccination. To our knowledge, this protocol is the first to characterize the human cellular and molecular immune system parameters, or immunome, in a large number of healthy adults (NIH employees). This information may be useful in designing newer, more effective vaccines to prevent the spread of H1N1 influenza.
Publication: Global analyses of human immune variation reveal baseline predictors of post-vaccination responses. *Cell.* 2014 Apr 10;157(2):499-513. doi: 10.1016/j.cell.2014.03.031. [PubMed]

Assays in ImmPort:

Assay Type	Number of Exp. Samples
Array	301
ELISPOT	227
Flow Cytometry	1225
Virus Neutralization	292

Clinical Assessments in ImmPort: none
Notes: New study

Study Program: New York Influenza Center of Excellence
Title: Heterosubtypic influenza infection antagonizes elicitation of immunological reactivity to hemagglutinin
Accession: SDY226
Subjects: 208
Study PI, contact: Andrea Sant, PhD, University of Rochester, Rochester, NY
Study Description: Influenza-specific immunity in humans is unique because there are repeated exposures to viral strains containing genetically conserved epitopes recruiting memory CD4 T cells and novel epitopes stimulating naive CD4 T cells, possibly resulting in competition between memory and naive lymphocytes. In this study, we evaluated the effect of this competition on CD4 T cell and B cell response specificity using a murine model of sequential influenza infection.

Publication: Cutting Edge: Heterosubtypic influenza infection antagonizes elicitation of immunological reactivity to hemagglutinin. *JImmunol.* 2013 Aug 1;191(3):1001-5. doi: 10.4049/jimmunol.1203520. Epub 2013 Jun 21. [PubMed]

Assays in ImmPort:

Assay Type	Number of Exp. Samples
ELISA	247
ELISPOT	563
Virus Neutralization	28

Clinical Assessments in ImmPort: none
Notes: New study

Study Program: Influenza Pathogenesis and Immunology Research Center (IPIRC)
Title: Programming the magnitude and persistence of antibody responses with innate immunity
Accession: SDY268
Subjects: 8
Study PI, contact: Bali Pulandran, PhD, Emory University, Atlanta, GA
Study Description: Adjuvanting the 2009 pandemic H1N1 whole inactivated virus (WIV) with PLGA(MPL+R837) confers enhanced antigen-specific immunity in mice
Publication: Programming the magnitude and persistence of antibody responses with innate immunity. *Nature.* 2011 Feb 24;470(7335):543-7. doi: 10.1038/nature09737. [PubMed]

Assays in ImmPort:

Assay Type	Number of Exp. Samples
ELISA	24
Hemagglutination Inhibition	8

Clinical Assessments in ImmPort: none
Notes: New study

Study Program: HLA Region Genomics in Immune-Mediated Diseases
Title: HLA Homozygous Cell Haplotype Sequencing
Accession: SDY295
Subjects: 106
Study PI, contact: Peter Parham PhD, Stanford University
Study Description: The 4.7Mbp HLA region contains numerous immune-system genes, notably those involved in detecting the presence of infection, malignancy and transplanted tissue and providing ligands that interact with lymphocyte receptors to trigger human innate and adaptive immune responses. Some of these genes are extraordinarily polymorphic, subject to balancing selection and associated with resistance/susceptibility to a wide range of infectious, autoimmune and allergic diseases, as well as being major arbiters of transplant rejection, graft-versus- disease following hematopoietic stem cell transplantation, and pregnancy syndromes. Despite the wide-ranging importance of the HLA region, and its dominance in the genetic associations with many human diseases, no concerted effort to systematically study the variation in HLA haplotype sequences has been undertaken. We propose to do this by developing a method that will allow characterization of hundreds of haplotypes in an accurate and cost-effective manner.
Publication: Very long haplotype tracts characterized at high resolution from HLA homozygous cell lines. Immunogenetics. 2015 Sep;67(9):479-85. doi: 10.1007/s00251-015-0857-y. [PubMed]

Assays in ImmPort:

Assay Type	Number of Exp. Samples
Genotyping	108

Clinical Assessments in ImmPort: none
Notes: New study

Study Program: Immunobiology of Aging
Title: Immunobiology of Aging
Accession: SDY420
Subjects: 744
Study PI, contact: Charles Fathman MD, Stanford University, Stanford, CA
Study Description: A comprehensive database of immune phenotyping and functional profiling of healthy adults can serve as a universal control (denominator) for studies on diseases (numerator) while accounting for age, gender and chronic infection.
Publication: Large-Scale and Comprehensive Immune Profiling and Functional Analysis of Normal Human Aging. *PLoS One.* 2015 Jul 21;10(7):e0133627. doi: 10.1371/journal.pone.0133627. eCollection 2015 [PubMed]

Assays in ImmPort:

Assay Type	Number of Exp. Samples
FCM	1130
Luminex xMap	1140

Clinical Assessments in ImmPort: none
Notes: New study

Study Program: Autoimmunity Centers of Excellence
Title: Treatment of MS with Copaxone and Albuterol
Accession: SDY471
Subjects: 44
Study PI, contact: Samia Khoury MD, Brigham and Women's Hospital, Harvard Medical School
Study Description: MS is a chronic inflammatory disease of the central nervous system characterized by focal T cell and macrophage infiltrates that lead to demyelination and loss of neurologic function. Four therapies are currently approved for the treatment of MS. Three of these are approved for the treatment of patients with the relapsing-remitting (RR) form of MS, in which patients have clinical exacerbations followed by partial or complete recovery of function. These treatments are only modestly effective and are associated with significant toxicity, often causing patients to delay therapy for significant lengths of time. Thus, there is a need to find therapies with low toxicities that can be administered early during the disease course with the potential for arresting the disease.
Publication: A randomized controlled double-masked trial of albuterol add-on therapy in patients with multiple sclerosis. Arch Neurol. 2010 Sep;67(9):1055-61. doi: 10.1001/archneurol.2010.222. [PubMed]

Assays in ImmPort:

Assay Type	Number of Exp. Samples
ELISA	2055

Clinical Assessments in ImmPort: Laboratory tests, adverse events, concomitant medications, neurological assessments
Notes: New study

Study Program: Autoimmunity Centers of Excellence
Title: Lovastatin Therapy in Rheumatoid Arthritis
Accession: SDY473
Subjects: 64
Study PI, contact: Cynthia Aranow MD, North Shore-Long Island Jewish Health System
Study Description: This is a double-blind, placebo-controlled, randomized trial determining whether treatment with a statin reduces the serum CRP in subjects with mildly active RA. After obtaining informed consent, subjects will complete a screening visit (visit 0) to determine whether inclusion and exclusion entry criteria are fulfilled. Eligible subjects will return within 7 days for visit 1 to receive study medication (lovastatin 80 mg/day vs. placebo). Under certain circumstances, the dose may be adjusted. Subjects will return for evaluation every 4 weeks for the duration of this 12-week study. In addition, subjects will have a blood sample drawn at Day 14 to assess CPK and transaminase levels for safety monitoring.

Assays in ImmPort:

Assay Type	Number of Exp. Samples
ELISA	369

Clinical Assessments in ImmPort: Laboratory tests, adverse events, concomitant medications
Notes: New study

Study Program: Autoimmunity Centers of Excellence
Title: Vitamin D3 in Systemic Lupus Erythematosus
Accession: SDY474
Subjects: 57
Study PI, contact: Cynthia Aranow MD, North Shore-Long Island Jewish Health System
Study Description: This is a double-blind, multi-center, placebo controlled, Phase II study designed to assess biologic effects of 12 weeks of vitamin D3 supplementation on patients with well-controlled stable systemic lupus erythematosus who have low serum levels of 25-OH vitamin D and an IFN alpha signature.
Publication: Randomized, Double-Blind, Placebo-Controlled Trial of the Effect of Vitamin D3 on the Interferon Signature in Patients With Systemic Lupus Erythematosus. Arthritis Rheumatol. 2015 Jul; 67: 1848–1857. doi: 10.1002/art.39108 [PubMed]

Assays in ImmPort:

Assay Type	Number of Exp. Samples
Q-PCR	162

Clinical Assessments in ImmPort: Laboratory tests, adverse events, concomitant medications
Notes: New study

Study Program: New York Influenza Center of Excellence
Title: Effect of Influenza A (H5N1) Vaccine Prepandemic Priming on CD4+ T-Cell Responses
Accession: SDY644
Subjects: 94

Study PI, contact: Jennifer Nayak MD, University of Rochester, Rochester, NY
Study Description: Previous priming with avian influenza vaccines results in more rapid and more robust neutralizing antibody responses upon revaccination, but the role CD4+ T cells play in this process is not currently known.
Publication: Effect of influenza A(H5N1) vaccine prepandemic priming on CD4+ T-cell responses. *J.Infect.Dis.* 2015 May 1;211(9):1408-17. doi: 10.1093/infdis/jiu616. Epub 2014 Nov 6 [PubMed]

Assays in ImmPort:

Assay Type	Number of Exp. Samples
ELISPOT	651
Virus Neutralization	373

Clinical Assessments in ImmPort: none
Notes: New study

Study Program: Immunological basis of age-related vulnerability in Biodefense and emerging infections
Title: Repeated *in vivo* stimulation of T and B cell responses in old mice generates protective immunity against lethal West Nile Virus encephalitis
Accession: SDY646
Subjects: 8
Study PI, contact: Janko Nikolich PhD, University of Arizona, Tucson, AZ
Study Description: This study characterizes T and B cell responses in old mice after vaccination with RepliVAX WN, a novel West Nile encephalitis vaccine based on single-cycle flavivirus particles.
Publication: Repeated *in vivo* stimulation of T and B cell responses in old mice generates protective immunity against lethal West Nile virus encephalitis. *J.Immunol.* 2011 Apr 1;186(7):3882-91. doi: 10.4049/jimmunol.1002799. Epub 2011 Feb 21. [PubMed]

Assays in ImmPort: custom file format - PRIZM
Clinical Assessments in ImmPort: none
Notes: New Study. Study contains data in Prizm file format corresponding to publication figures.

Study Program: Immunological basis of age-related vulnerability in Biodefense and emerging infections
Title: Age-associated alterations in CD8 alpha+ dendritic cells impair CD8
Accession: SDY647
Subjects: 6
Study PI, contact: Janko Nikolich PhD, University of Arizona, Tucson, AZ
Study Description: Age-associated decline in immunity to infection has been documented
Publication: Age-associated alterations in CD8 alpha + dendritic cells impair CD8 T-cell expansion in response to an intracellular bacterium. *Aging Cell.* 2012 Dec;11(6):968-77. doi: 10.1111/j.1474-9726.2012.00867.x. Epub 2012 Aug 30. [PubMed]

Assays in ImmPort: custom file format - PRIZM
Clinical Assessments in ImmPort: none
Notes: New Study. Study contains data in Prizm file format corresponding to publication figures.

Study Program: Immunological basis of age-related vulnerability in Biodefense and emerging infections
Title: Two separate defects affecting true naïve or virtual memory T cell precursors combine to reduce naïve T cell responses with aging.
Accession: SDY649
Subjects: 5

Study PI, contact: Janko Nikolich PhD, University of Arizona, Tucson, AZ
Study Description: Unimmunized TCR transgenic (TCRTg) mice undergo massive VM conversion with age, exhibiting rapid effector function upon both TCR and cytokine triggering
Publication: Two separate defects affecting true naïve or virtual memory T cell precursors combine to reduce naïve T cell responses with aging. *J.Immunol.* 2014 Jan 1;192(1):151-9. doi: 10.4049/jimmunol.1301453. Epub 2013 Nov 29.Epub 2012 Aug 30. [PubMed]

Assays in ImmPort: custom file format - PRIZM
Clinical Assessments in ImmPort: none
Notes: New Study. Study contains data in Prizm file format corresponding to publication figures.

Study Program: Immunological basis of age-related vulnerability in Biodefense and emerging infections
Title: West Nile virus induces pro-apoptotic miRNA
Accession: SDY651
Subjects: 0
Study PI, contact: Janko Nikolich PhD, University of Arizona, Tucson, AZ
Study Description: Profiles of cellular miRNA expression in WNV infected cells were analyzed. Expression of one miRNA Hs_154 (miR-6124) was highly induced in infected cells. This miRNA was shown to target several anti-apoptotic proteins (CTCF and ECOP/ VOPP1), potentially modulating WNV-induced apoptosis.
Publication: Induction of the cellular microRNA, Hs_154, by West Nile virus contributes to virus-mediated apoptosis through repression of anti-apoptotic factors. *J.Virol.* 2012 May;86(9):5278-87. doi: 10.1128/JVI.06883-11. Epub 2012 Feb 15. [PubMed]

Assays in ImmPort: custom file format - PRIZM
Clinical Assessments in ImmPort: none
Notes: New Study. Study contains data in Prizm file format corresponding to publication figures.

Study Program: Immunological basis of age-related vulnerability in Biodefense and emerging infections
Title: Mouse recombination path counting on GPU
Accession: SDY652
Subjects: 2
Study PI, contact: Janko Nikolich PhD, University of Arizona, Tucson, AZ
Study Description: Test convergent recombination as a predictor of TCR beta production efficiency
Publication: Overcoming the limitations posed by TCR repertoire modeling through a GPU-based *in-silico* DNA recombination algorithm. 2014. *Institute of Electrical and Electronic Engineers: International Parallel and Distributed Processing Symposium.*

Assays in ImmPort:

Assay Type	Number of Exp. Samples
Sequencing	2

Clinical Assessments in ImmPort: none
Notes: New Study

Study Program: Immunological basis of age-related vulnerability in Biodefense and emerging infections
Title: Immune memory boosting dose of rapamycin impairs macrophage vesicle acidification and curtails glycolysis in effector CD8 cells, impairing defense against acute infections
Accession: SDY653
Subjects: 2

Study PI, contact: Janko Nikolich PhD, University of Arizona, Tucson, AZ
Study Description: This study investigated the impact of acute Rapa treatment on immune effector cell function during the primary immune response to several acute infections.
Publication: Immune memory-boosting dose of rapamycin impairs macrophage vesicle acidification and curtails glycolysis in effector CD8 cells, impairing defense against acute infections. *J.Immunol.* 2014 Jul 15;193(2):757-63. doi: 10.4049/jimmunol.1400188. Epub 2014 Jun 9. [PubMed]

Assays in ImmPort: custom file format - PRIZM
Clinical Assessments in ImmPort: none
Notes: New Study. Study contains data in Prizm file format corresponding to publication figures.

Study Program: Immunological basis of age-related vulnerability in Biodefense and emerging infections
Title: Lifespan-extending caloric restriction or mTOR inhibition impair adaptive immunity of old mice by distinct mechanisms
Accession: SDY654
Subjects: 10
Study PI, contact: Janko Nikolich PhD, University of Arizona, Tucson, AZ
Study Description: This study tested how Rapa and caloric restriction each impacted the immune system in adult and old mice
Publication: Lifespan-extending caloric restriction or mTOR inhibition impairs adaptive immunity of old mice by distinct mechanisms. *Aging Cell.* 2015 Feb;14(1):130-8. doi: 10.1111/acel.12280. Epub 2014 Nov 26. [PubMed]

Assays in ImmPort: custom file format - PRIZM
Clinical Assessments in ImmPort: none
Notes: New Study. Study contains data in Prizm file format corresponding to publication figures.

Study Program: Immunological basis of age-related vulnerability in Biodefense and emerging infections
Title: Histone deacetylation critically determines T cell subset radiosensitivity
Accession: SDY656
Subjects: 1
Study PI, contact: Janko Nikolich PhD, University of Arizona, Tucson, AZ
Study Description: This study examined the radiosensitivity of naive (TN), effector memory (TEM), and central memory (TCM) T cell subsets in C57BL/6 mice and found TEM to be more resistant to radiation-induced apoptosis than either TN or TCM
Publication: Histone deacetylation critically determines T cell subset radiosensitivity. *J.Immunol.* 2014 Aug 1;193(3):1451-8. doi: 10.4049/jimmunol.1400434. Epub 2014 Jul 2. [PubMed]

Assays in ImmPort: custom file format - PRIZM
Clinical Assessments in ImmPort: none
Notes: New Study. Study contains data in Prizm file format corresponding to publication figures.

Study Program: Immunological basis of age-related vulnerability in Biodefense and emerging infections
Title: Contrasting effects of chronic, systemic treatment with mTOR inhibitors rapamycin and metformin on adult neural progenitors in mice
Accession: SDY659
Subjects: 3
Study PI, contact: Janko Nikolich PhD, University of Arizona, Tucson, AZ

Study Description: This study evaluates the effects of chronic and systemic administration of the two mTOR inhibitors, rapamycin and metformin, on adult neural stem cells of the subventricular region and the dendate gyrus of the mouse hippocampus
Publication: Contrasting effects of chronic, systemic treatment with mTOR inhibitors rapamycin and metformin on adult neural progenitors in mice. *PLoS One.* 2014 Feb;36(1):199-212. doi: 10.1007/s11357-013-9572-5. Epub 2013 Aug 16. [PubMed]

Assays in ImmPort: none
Clinical Assessments in ImmPort: none
Notes: New Study

Study Program: Immunological basis of age-related vulnerability in Biodefense and emerging infections
Title: Self-recognition drives the preferential accumulation of promiscuous CD4+ T-cells in aged mice
Accession: SDY663
Subjects: 6
Study PI, contact: Janko Nikolich PhD, University of Arizona, Tucson, AZ
Study Description: This study looks at how the ability of the CD4+ T-cell compartment to bind self- and foreign-pMHC changes over the lifespan
Publication: Self-recognition drives the preferential accumulation of promiscuous CD4+ T-cells in aged mice. *Elife.* 2015 Jul 14;4. doi: 10.7554/eLife.05949.. [PubMed]

Assays in ImmPort: custom file format - PRIZM
Clinical Assessments in ImmPort: none
Notes: New Study. Study contains data in Prizm file format corresponding to publication figures.
